



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,260	10/05/2005	Ryouichi Shimoi	050340-0193	6538
20277 7590 10/30/2007 MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096			EXAMINER PARSONS, THOMAS H	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 10/30/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/552,260

Applicant(s)

SHIMO ET AL.

Examiner

Thomas H. Parsons

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 19-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 19-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 12-28 are objected to because of the following informalities:

Suggest changing "Claims 12-28 (Cancelled)" to --Claims 12-19 (Cancelled)--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-11, 20, and 22-26 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 10/48846.

**Claim 1:** WO 01/48846 (hereafter WO '846) in Figures 1-3 discloses a fuel cell assembly (100 in Figure 1) comprising: a fuel cell stack (110, in Figure 1) formed by laminating a plurality of cells (page 1, line 7 through page 2, line 19);

plus and minus current extraction sections (i.e. fluid impermeable plates), the current extraction sections extracting current generated by the fuel cell stack (110 in Figure 1) and sandwiching the fuel cell stack with respect to the direction of lamination (page 12, line 13 through page 14, line 24); and

a passage allowing flow of a fluid provided in at least one of the current extraction sections (page 12, line 13-page 14, line 24). See also, abstract, page 1, line 7 through page 3, line 14, page 4, line 17 through page 7, line 24, page 9, line 9 through page 10, line 6, page 12, line 7 through page 19, line 3, and page 27, line 10 through page 29, line 6.

**Claim 2:** WO '846 discloses that each current extraction section comprises a current extraction plate (i.e. a fluid impermeable plate) for extracting the generated current (page 12, line 13 through page 14, line 24) and an end plate for uniformly binding the cells of the fuel cell stack (page 1, line 34 through page 2, line 19, and wherein the passage for the fluid is formed between the current extraction plate and the end plate.

In particular, WO '486 discloses fuel cells sandwiched between current extractions sections (i.e. fluid impermeable plates), which are assembled between end plates. WO discloses that that plates may have coolant flow channels on both surfaces thereof. Therefore, when the fuel cell assembly, sandwiched between a plate having coolant channels on both surfaces, is assembled between endplates, a passage for coolant would be formed between formed between the current extraction plate and the end plate.

**Claim 3:** WO '846 discloses that each current extraction section comprises a current extraction plate (i.e. a fluid impermeable plate) for extracting the generated current (page 12, line 13 through page 14, line 24) and an end plate for uniformly binding the cells of the fuel cell stack (page 1, line 34 through page 2, line 19, the passage being formed inside at least one of the current extraction plate and the end plate (i.e., fluid channels are formed in the surfaces thereof).

**Claim 4:** WO '486 discloses that the fluid is cooling water for cooling the fuel cell stack (page 16, line 11).

**Claim 5:** WO 01/48846 (hereafter WO '846) in Figures 1-3 discloses a fuel cell assembly (100 in Figure 1) comprising: a fuel cell stack (110, in Figure 1) formed by laminating a plurality of cells (page 1, line 7 through page 2, line 19);

plus and minus current extraction sections (i.e. fluid impermeable plates), the current extraction sections extracting current generated by the fuel cell stack (110 in Figure 1) and sandwiching the fuel cell stack with respect to the direction of lamination (page 12, line 13 through page 14, line 24); and

a passage allowing flow of a fluid provided in at least one of the current extraction sections (page 12, line 13-page 14, line 24); and a heating device for heating the passage for the fluid (page 16, lines 33-36, page 17, line 24-27, and page 9, line 34 through page 10, line 6). See also, abstract, page 1, line 7 through page 3, line 14, page 4, line 17 through page 7, line 24, page 9, line 9 through page 10, line 6, page 12, line 7 through page 19, line 3, and page 27, line 10 through page 29, line 6.

**Claim 6:** WO '486 discloses that the fluid is combustible (i.e. hydrogen, which is the same combustible fluid as that instantly disclosed) and the heating device comprises a catalyst applied to the passage in order to combust the fluid (page 9, line 34 through page 10, line 6).

**Claim 7:** WO '486 in Figure 1 discloses that the heating device (heat exchanger 142 in Figure 1) heats the fluid and supplies the heated fluid to the passage.

**Claim 8:** WO '486 discloses that the fluid is combustible (i.e. hydrogen, which is the same combustible fluid as that instantly disclosed) and the heating device comprises an ignition device for combusting the fluid (page 9, line 34 through page 10, line 6).

**Claim 9:** The recitation “wherein the heating device heats at least one of the current extraction sections when the fuel cell stack is started up”, has been considered, and construed as a process limitation that adds no additional structure to the fuel cell system. However, WO ‘486 discloses that the heating device heats at least one of the current extraction sections when the fuel cell stack is started up (page 1, lines 7-18)

**Claim 10:** WO ‘486 in Figure 1-3 that the heating device comprises means (page 9, line 34 through page 10, line 6) for combusting cathode gas for the fuel cell stack and the heating device heats at least one of the current extraction sections using the heat of combustion (page 16, lines 33-36, and page 17, lines 23-26).

**Claim 11:** WO ‘486 in Figures 1-3 disclose that the heating device comprises means for combusting a gaseous mixture of cathode gas and anode gas for the fuel cell stack and the heating device heats at least one of the current extraction sections using the heat of combustion (page 9, line 34 through page 10, line 6, page 16, lines 33-36, and page 17, lines 23-26).

**Claim 20:** WO ‘486 in Figures 1-3 disclose that the heating device (page 9, line 34 through page 10, line 6) comprises means (121) for supplying anode gas (120) for the fuel cell stack to the current extraction sections after supplying cathode gas (130) for the fuel cell stack to the current extraction sections and means for combusting the gaseous mixture of anode gas and cathode gas. See also page 16, line 33 through page 17, line 20).

**Claim 22:** WO ‘846 discloses that each current extraction section comprises a current extraction plate (i.e. a fluid impermeable plate) for extracting the generated current (page 12, line 13 through page 14, line 24) and an end plate for uniformly binding the cells of the fuel cell stack

Art Unit: 1795

(page 1, line 34 through page 2, line 19, and wherein the passage for the fluid is formed between the current extraction plate and the end plate.

In particular, WO '486 discloses fuel cells sandwiched between current extractions sections (i.e. fluid impermeable plates), which are assembled between end plates. WO discloses that plates may have coolant flow channels on both surfaces thereof. Therefore, when the fuel cell assembly, sandwiched between a plate having coolant channels on both surfaces, is assembled between endplates, a passage for coolant would be formed between formed between the current extraction plate and the end plate.

**Claim 23:** WO '846 discloses that each current extraction section comprises a current extraction plate (i.e. a fluid impermeable plate) for extracting the generated current (page 12, line 13 through page 14, line 24) and an end plate for uniformly binding the cells of the fuel cell stack (page 1, line 34 through page 2, line 19, the passage being formed inside at least one of the current extraction plate and the end plate (i.e., fluid channels are formed in the surfaces thereof).

**Claim 24:** WO 01/48846 (hereafter WO '846) in Figures 1-3 discloses a fuel cell assembly (100 in Figure 1) comprising: a fuel cell stack (110, in Figure 1) formed by laminating a plurality of cells (page 1, line 7 through page 2, line 19);

plus and minus current extraction sections (i.e. fluid impermeable plates), the current extraction sections extracting current generated by the fuel cell stack (110 in Figure 1) and sandwiching the fuel cell stack with respect to the direction of lamination (page 12, line 13 through page 14, line 24); and

and an enclosed cavity for confining fluid therein formed in at least one of the current extraction sections (page 5, lines 21-30).

**Claim 25:** WO '846 discloses that each current extraction section comprises a current extraction plate (i.e. a fluid impermeable plate) for extracting the generated current (page 12, line 13 through page 14, line 24) and an end plate for uniformly binding the cells of the fuel cell stack (page 1, line 34 through page 2, line 19, and the enclosed cavity (page 5, lines 21-30) being formed between the current extraction plate and the end plate.

In particular, WO '486 discloses fuel cells sandwiched between current extractions sections (i.e. fluid impermeable plates), which are assembled between end plates. WO discloses that plates may have coolant flow channels on both surfaces thereof. Therefore, when the fuel cell assembly, sandwiched between a plate having coolant channels on both surfaces, is assembled between endplates, a passage for coolant would be formed between the current extraction plate and the end plate.

**Claim 26:** WO '846 discloses that each current extraction section comprises a current extraction plate (i.e. a fluid impermeable plate) for extracting the generated current (page 12, line 13 through page 14, line 24) and an end plate for uniformly binding the cells of the fuel cell stack (page 1, line 34 through page 2, line 19, the enclosed cavity (page 5, lines 21-30) being formed inside at least one of the current extraction plate and the end plate.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.



5. Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/48846 as applied to claims 5, 9, 11 and 20 above.

WO 01/48856 is as applied, argued, and disclosed above, and incorporated herein.

**Claim 19 and 21:** WO '846 discloses that the anode gas is the gas fed to the anode. WO '846 does not disclose that the anode gas is an anode gas discharged from the fuel cell stack. However, WO '846 discloses, "IN the fuel cell power generation systems illustrated in FIGS. 1-3, other conduit and/or valving configurations may be suitable, depending upon the application, provided that at least a portion of the fuel and oxidant streams can be diverted to the coolant pathway". Therefore, it would have been within the skill of one having ordinary skill in the art at the time the invention was made to have modified the valving of the WO '846 fuel cell system to provide an anode gas discharged from the fuel cell stack.

### ***Examiner Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H. Parsons whose telephone number is (571) 272-1290. The examiner can normally be reached on M-F (7:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thomas H Parsons  
Examiner  
Art Unit 1795

\*\*\*



PATRICK JOSEPH RYAN  
SUPERVISORY PATENT EXAMINER